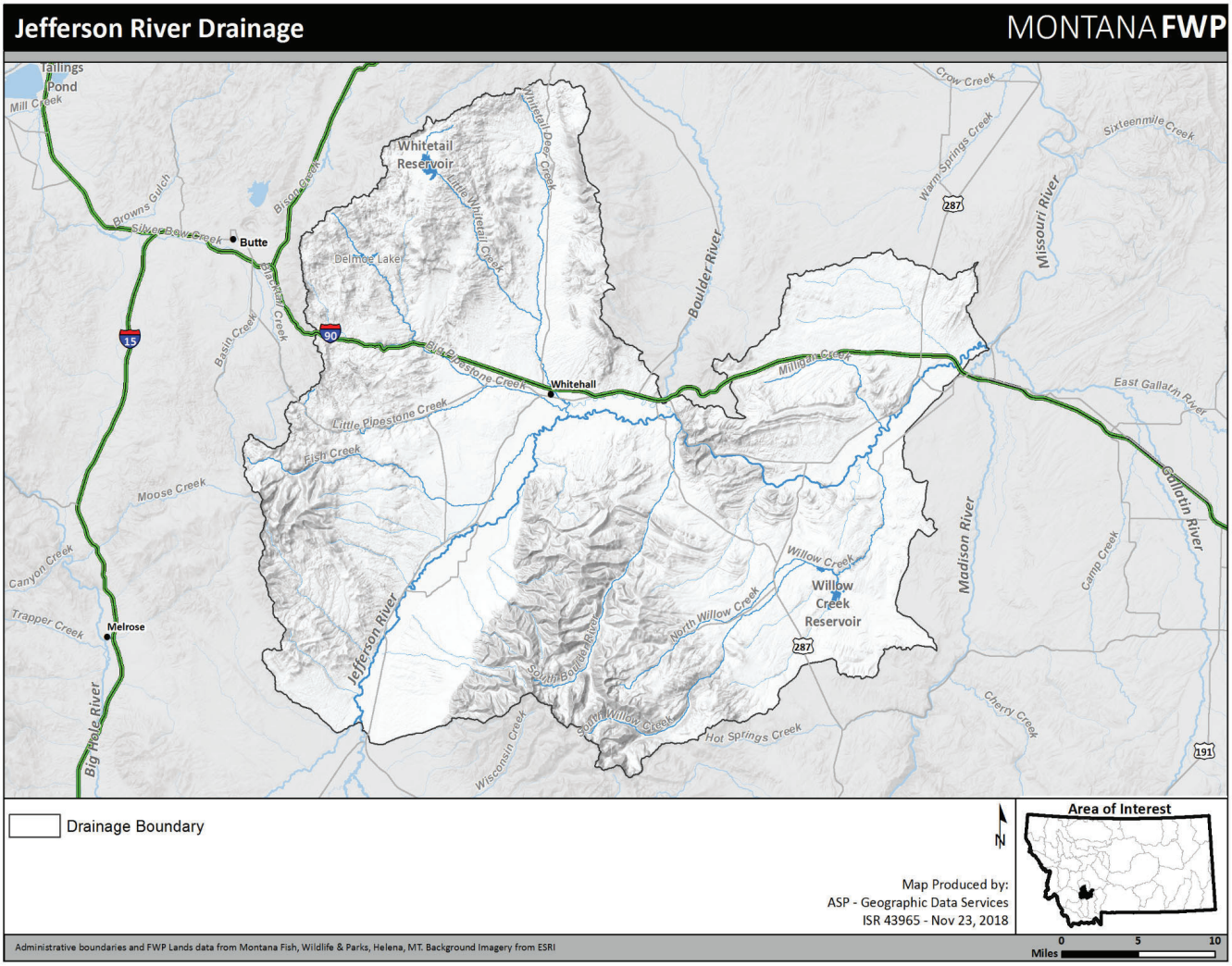

Jefferson River Drainage
MONTANA FWP
Tailings Pond
Mill Creek
Whitetail Reservoir
Whitetail Deep Creek
Little Whitetail Creek
Crow Creek
Sixteenmile Creek
Warm Springs Creek
287
Missouri River
Boulder River
Browns Gulch
Silver Bow Creek
Butte
Bison Creek
Delmoe Lake
Blacktail Creek
Basin Creek
15
90
Big Pipestone Creek
Whitehall
Milligan Creek
East Gallatin River
Little Pipestone Creek
Fish Creek
Moose Creek
Gallatin River
Madison River
Canyon Creek
Trapper Creek
Melrose
Willow Creek
Willow Creek Reservoir
Camp Creek
Jefferson River
North Willow Creek
South Boulder River
South Willow Creek
Hot Springs Creek
Cherry Creek
Big Hole River
Wisconsin Creek
191
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
5
10
Miles

JEFFERSON RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Jefferson River flows for 84 miles from its origin at the junction of the Big Hole and Beaverhead rivers to its mouth at Three Forks, Montana where it joins the Madison and Gallatin rivers to form the Missouri River. Much of the Jefferson River is braided, particularly in the area near Three Forks where many islands and side channels exist. During the irrigation season, virtually all the tributaries to the Jefferson are diverted before reaching the river. The Boulder River is the only tributary to contribute a significant volume of flow during the high-water period.

FISHERIES MANAGEMENT

The Jefferson River basin contains fish species common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, and white sucker. Northern pike were detected in the Jefferson River in the 2000s.

The sport fishery of the Jefferson River is primarily comprised of brown and rainbow trout. Current trout density in the upper river is approximately 600 trout per mile in the upper 40 miles of the river, and less than 300 trout per mile in the lower 40 miles of the Jefferson River. Trout abundance is closely associated with streamflow levels, with significant declines in fish populations occurring during drought cycles (late 1980s and 2000-2007), and documented recoveries during recent years of near normal streamflow. The goal of habitat and flow restoration projects in the Jefferson River and associated tributaries is to sustain 1,000 trout per mile in the upper 40 miles and 500 trout per mile in the lower 40 miles of the Jefferson River.

Hell's Canyon Creek, Parson's Slough, Willow Springs, and North Boulder River are known to be important tributaries for supporting the wild trout population of the Jefferson River. Pipestone Creek, Whitetail Creek, South Boulder River, Antelope Creek, and Willow Creek have significant flow and sediment delivery issues impairing current values for supporting the Jefferson River fishery. Fish Creek, Mill Creek, Halfway Creek, and Whitetail Creek contain conservation populations of westslope cutthroat trout (See *Status and Conservation Needs for Westslope Cutthroat Trout in Southwest Montana*. *FWP, 2011)*.

Fish stocking records for the Jefferson River are documented to begin in the 1920s and continue through the early 1970s when wild trout management philosophies were instituted. Historically stocked species in the Jefferson River included: rainbow trout, brown trout, cutthroat trout (undesignated), and bass. In 1989 and 1990, rainbow trout and brown trout were stocked for the specific purpose of establishing a spawning run into Jefferson River tributaries. Arctic grayling were stocked in 2002 and 2003; however, no natural reproduction was detected through monitoring, and therefore reintroduction efforts were terminated.

The Jefferson River is open to angling during the entire year. The combined trout fishing regulation for the entire Jefferson River is 3 fish daily and in possession, only 1 over 18 inches and only 1 may be a rainbow trout. These regulations are in place to encourage recovery of fish populations in concert with ongoing habitat conservation activities. No limit is imposed on northern pike to help prevent the further establishment of the invading population.

The relationship between drought impacts to trout populations and subsequent angler use are well established for the Jefferson River. Prior to extended drought conditions (initially observed in 1988) angler effort reached 27,456 (1983) angler days. Within the past decade, angler effort in the Jefferson River has varied from 7,000 to nearly 14,000 angler days per year. In other words, during periods of time (years) when flow and temperature conditions are favorable for trout populations, trout densities increase and angler days increase.

Various high mountain lakes and lowland reservoirs exist within the Jefferson River basin. Willow Creek Reservoir, Delmoe Lake, Homestake Lake, and Piedmont Pond are coldwater lakes/ponds are stocked annually to provide fishing opportunities.

HABITAT

The mainstem Jefferson River has desirable habitat quality for supporting a sport fishery of brown and rainbow trout during years of average or above average streamflow. Water quantity and quality is severely impaired during drought years when water recedes from structural habitat along the shoreline, and water temperature approaches 80º F. Quality tributaries able to provide suitable trout spawning and rearing habitat are rare.

Over the past 25 years, priority habitat enhancement efforts have focused on flow improvements during summer irrigation, tributary restoration projects to enhance spawning and rearing habitat, and encouraging sound floodplain function practices through permit review processes. Participation in the implementation of the Jefferson River Drought Plan with the Jefferson River Watershed Council and water users has been the primary tool for preventing acute dewatering of the river.

The average width of the river is about 197 feet. The gradient averages 7.3 feet per mile and sinuosity is 1.6. The bottom substrate is primarily gravel-cobble. Heavy depositions of silt occur at some main river sites and in many side channels. FWP determined that the minimum instream flow for fish and other aquatic life for the Jefferson River is 1,100 cfs, based on the upper inflection point of the wetted perimeter (WETP) model.

FISHING ACCESS

Anglers and boaters can launch boats at 11 FASs distributed along the 77-mile reach of the Jefferson River.

SPECIAL MANAGEMENT ISSUES

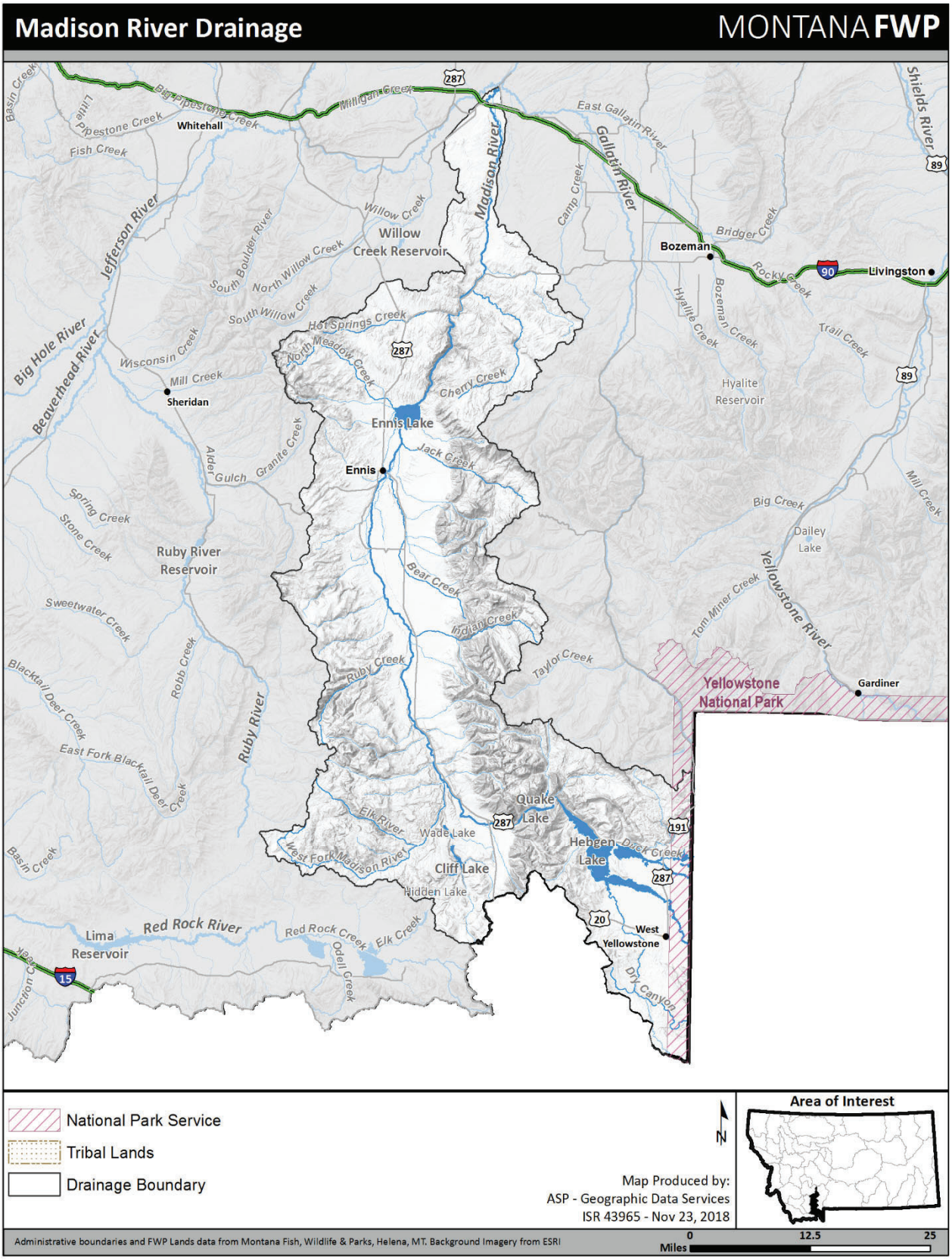
A drought management plan was developed and approved in July 2000, to attract voluntary participation in meeting stream flow targets in the Jefferson River Basin. This plan was modified in 2012. This plan identifies various flow and temperature targets that once reached initiate conservation measures to benefit the aquatic resources. Considerable work has been

completed within the basin to enhance stream flows (e.g., Hell's Canyon Water Lease) and improve spawning conditions (tributary enhancement projects). Future work will look at the potential of flow augmentation from upstream reservoirs (e.g., Ruby and Willow Creek reservoirs) to benefit aquatic resources during times of low flow. Northern pike have become established through an unauthorized introduction in the Missouri headwaters area including parts of the Jefferson River. To address threats of northern pike on trout populations, FWP removed harvest regulations on northern pike throughout the basin in 2011, and initiated removal efforts in 2012.

The Jefferson River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Jefferson River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTIONS FOR JEFFERSON RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Jefferson River and Tributaries (Twin Bridges to Cardwell)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Continue to restrictive harvest to improve trout numbers to recover from drought impacts.
		Mountain whitefish (N)	Wild	General	Continue to maintain abundance.
Habitat needs and activities: The upper 40 miles of the Jefferson River and associated tributaries have periodic dewatering issues, but the reach has high potential for trout recovery. Activities: improve instream flow conditions and drought plan implementation, improve spawning tributaries, and maintain function of the river channel and floodplain health.					
Jefferson River and Tributaries (Cardwell to Confluence with Madison River)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Continue to restrictive harvest to improve trout recovery.
		Mountain whitefish (N)	Wild	General	Continue to maintain abundance.
Willow Creek Reservoir	713 acres	Rainbow trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth and manage wild brood stock.
		Brown trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth.
Habitat needs and activities: Water Level Management at this DNRC Reservoir.					
Delmoe Lake	279 acres	Westslope cutthroat trout	Hatchery	Put- Take	Continue to manage stocking and harvest to maintain fish growth.
Habitat needs and activities: Private Reservoir with challenging water level issues. Occasional blue-green algae blooms during late summer.					
Tobacco Root Mountain Lakes	16 lakes and 128 acres	Westslope cutthroat trout	Wild/ Hatchery	General/ Put, Grow and Take	Continue to manage stocking and harvest to maintain fish growth.
		Brook trout, Rainbow trout	Wild	General	Continue to manage stocking to maintain fish growth.


Madison River Drainage
MONTANA FWP
Whitehall
Bozeman
Livingston
Sheridan
Ennis
Ennis Lake
Willow Creek Reservoir
Hyalite Reservoir
Ruby River Reservoir
Lima Reservoir
Quake Lake
Hebgen Lake
Cliff Lake
Wade Lake
Hidden Lake
Yellowstone National Park
Gardiner
West Yellowstone
Dailey Lake
Madison River
Gallatin River
East Gallatin River
Jefferson River
Big Hole River
Beaverhead River
Ruby River
Red Rock River
Yellowstone River
Shields River
Milligan Creek
Willow Creek
Camp Creek
Bridger Creek
Rocky Creek
Hyalite Creek
Bozeman Creek
Trail Creek
Mill Creek
Big Creek
Tom Miner Creek
Taylor Creek
Indian Creek
Bear Creek
Ruby Creek
Jack Creek
Cherry Creek
Hot Springs Creek
North Meadow Creek
South Willow Creek
North Willow Creek
South Boulder River
Wisconsin Creek
Alder Gulch
Granite Creek
Spring Creek
Stone Creek
Sweetwater Creek
Robb Creek
Blacktail Deer Creek
East Fork Blacktail Deer Creek
Basin Creek
Elk River
West Fork Madison River
Red Rock Creek
Elk Creek
Odell Creek
Dry Canyon
Junction Creek
Hebgen Creek
Pipestone Creek
Big Pipestone Creek
Fish Creek
Little Pipestone Creek
National Park Service
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
12.5
25
Miles

MADISON RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Madison River originates in Yellowstone National Park at the junction of the Firehole and Gibbon rivers. It then flows in a northerly direction for 149 miles to Three Forks, Montana, where it joins the Jefferson and Gallatin rivers to form the Missouri River. There are two impoundments on the river: Hebgen Reservoir, located 1.5 miles downstream from the park boundary, and Ennis Reservoir, located 65 miles downstream from Hebgen Reservoir. From its source in the park, the Madison crosses a high-forested plateau (7,000 ft and higher in elevation) to Hebgen Reservoir. Upon leaving Hebgen Reservoir, the Madison River flows about 3 miles through a narrow canyon to Earthquake Lake, a natural lake formed by an earth slide during a major earthquake on August 17, 1959. Below Earthquake Lake, the river enters the upper Madison River valley where it flows about 57 miles before entering Ennis Reservoir. After leaving Ennis Reservoir, the Madison enters a narrow gorge (Bear Trap Canyon) where it flows about 14 miles before entering the lower Madison River valley for the final 26 miles to its junction with the Jefferson and Gallatin rivers.

The Madison River is one of Montana's premier wild trout fisheries. High scenic values, good public access and excellent wild trout populations have all contributed to its national reputation as an outstanding sport fishery and have led to its designation as a "Blue Ribbon" trout stream by FWP.

Flows in the Madison River are regulated by the two reservoirs. Hebgen Reservoir built in 1915 by the Montana Power Company, stores water for downstream power generation. Water storage usually occurs during the snow runoff period of mid-May through early June. Stored water is released to downstream reservoirs during the fall (October-December). Fall releases usually range from 1,500 to 2,200 cfs at Hebgen Dam. Ennis Reservoir, built in 1908 by a predecessor of the Montana Power Company, has a rather stable water level with little storage capacity of its own. Its primary function is to create a head for the power generating facility immediately below Ennis Dam. Outflows from Ennis Reservoir are mainly regulated at Hebgen Dam. There are a total of 58 lakes or reservoirs in the Madison Drainage, totaling 18,334 surface acres.

Groundwater sources in Yellowstone National Park have a stabilizing influence on the seasonal flow pattern of the Madison River. As a result, the river exhibits a larger base flow in proportion to its annual runoff than most rivers in Montana; thus, the Madison River's seasonal flow pattern more closely resembles that of a giant spring-fed creek rather than a typical snow-fed mountain trout stream.

FISHERIES MANAGEMENT

The Madison River has a variety of native and nonnative fish species. The Madison River historically only had 11 native fish species including Arctic grayling, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, mountain whitefish, stonecat, white sucker, and westslope cutthroat trout. Several fish species have been introduced including: brook trout, brown trout, common carp, fathead minnow, rainbow trout, Utah chub, and Yellowstone cutthroat trout. The entire river is managed to provide a diverse recreational fishery for both

native and nonnative fish with regulations designed to help protect native populations while promoting harvest on nonnative predatory species that can impact native populations. The entire Madison River is managed as a wild fishery with no normal stocking scheduled for any section of the river.

Rainbow trout, brown trout, arctic grayling, brook trout, and coho salmon were stocked over the past century; however, all fish stocking to supplement wild populations was ended in the early 1970s. The Madison River is the birthplace of Wild Trout Management, where controversial studies conducted in the 1960s and 1970s showed that hatchery rainbow trout had negative impacts on wild-produced rainbow trout. This discovery led to the philosophy of wild trout management throughout Montana's trout rivers, and eventually wild fish management policies throughout all rivers in Montana. Wild trout management also emphasized managing habitat quality to help sustain natural recruitment and healthy fish populations. Hebgen Lake has an extensive history of fish stocking, starting in 1931. Species stocked in the early to mid-1900s included brown trout, undesignated cutthroat trout, rainbow trout, and Yellowstone cutthroat trout. Fish stocking was largely shifted to rainbow trout in the mid-1950s. Ennis Lake stocking was initiated in the late 1920s and continued through the mid-1990s. Since the 1920s, rainbow trout, Arctic grayling, undesignated cutthroat trout, and Yellowstone cutthroat trout have been stocked into Ennis Lake.

Regulations on the Madison River are complicated and diverse. Many of the fishing regulations are associated with social issues (e.g., no fishing from boats) and have little biological basis. A large proportion of the river is managed with catch-and-release regulations (with the exception of anglers under 14 years of age), and artificial lures only. Hebgen and Ennis Lakes are managed under Central District Standard regulations with the exception of catch-and-release only regulations for Arctic grayling in Ennis Lake.

Fishing pressure increased more than fivefold since the early 1950s. For the 102 miles of free-flowing river in Montana, angling pressure increased from an estimated 22,660 angler-days in 1952, to 125,726 angler days between May 1983 and April 1984, to over 200,000 angler days in 2009. Nonresident anglers represent upwards of 80% of all angler days in some reaches of the Madison River. Hebgen Reservoir has been a popular fishing destination over the past decade varying from 24,742 angler days in 2007 to 43,134 angler days in 2009. Angler use of Ennis Lake over the past decade has varied from 6,022 angler days in 2005 to 17,045 angler days in 2015.

Forty-nine mountain lakes exist within the Madison drainage that are managed as trout fisheries. Management of these lakes varies from periodic hatchery stocking to wild self-sustaining fisheries.

HABITAT

The Madison River drains approximately 2,500 square miles. About 70 percent of the drainage is covered with coniferous forests. The riparian zone of the wide, open upper and lower Madison River valleys is vegetated with willow, alder, cottonwood and an occasional conifer. Vegetation in the riparian zone of the lower Madison valley is denser than that of the upper valley. Agricultural lands in the upper and lower valley are primarily used for cattle grazing and hay

production. The subdivision of agricultural lands along the river in the upper valley for residential development is increasing.

The upper Madison above Ennis Lake generally exhibits excellent water quality and quantity in most years. Stream habitat in the upper drainage is in very good condition. Once the Madison leaves the canyon below Ennis Lake it begins to suffer from sedimentation and high water temperatures which limit the trout population in the lower river.

There are about 102 tributaries to Montana's portion of the Madison River. Most are short and small. About 20 tributaries provide a significant trout fishery and/or waterfowl habitat. Important tributaries to the Madison include Jack Creek near Ennis and the West Fork in the upper river.

Fishing Access

Fishing Access is well developed throughout the Upper Madison River corridor with 14 FWP-owned Fishing Access Sites, several BLM access sites, and a variety of public land access points. The lower Madison River between Grey Cliff FAS and Milwaukee FAS has little public access and provides a unique opportunity for floaters to experience a stretch of the river with a low level of use.

Special Management Issues

The Madison River is commonly one of the most fished bodies of water in the State of Montana, with river-wide angler days exceeding 200,000 angler days. Montana Fish, Wildlife and Parks initiated the development of a Recreation Management Plan in 2012 to address social concerns and prevent future degradation of the resource or user experiences. Development of a recreation plan is ongoing, with a citizen committee scheduled to convene for Negotiated Rulemaking in early 2019.

The lower Madison River below Ennis Dam suffers from chronic high water temperatures in summer. Fish kills have been documented at water temperatures above 82.5ºF. NorthWestern Energy, which operates the two reservoirs on the river, has in place a successful operating plan to keep water temperatures in the lower river below the critical lethal temperature for fish. When model targets dictate, NWE will temporarily raise discharges from Ennis Dam (called pulsing), which holds water temperatures below 80ºF at Blacks Ford Fishing Access Site.

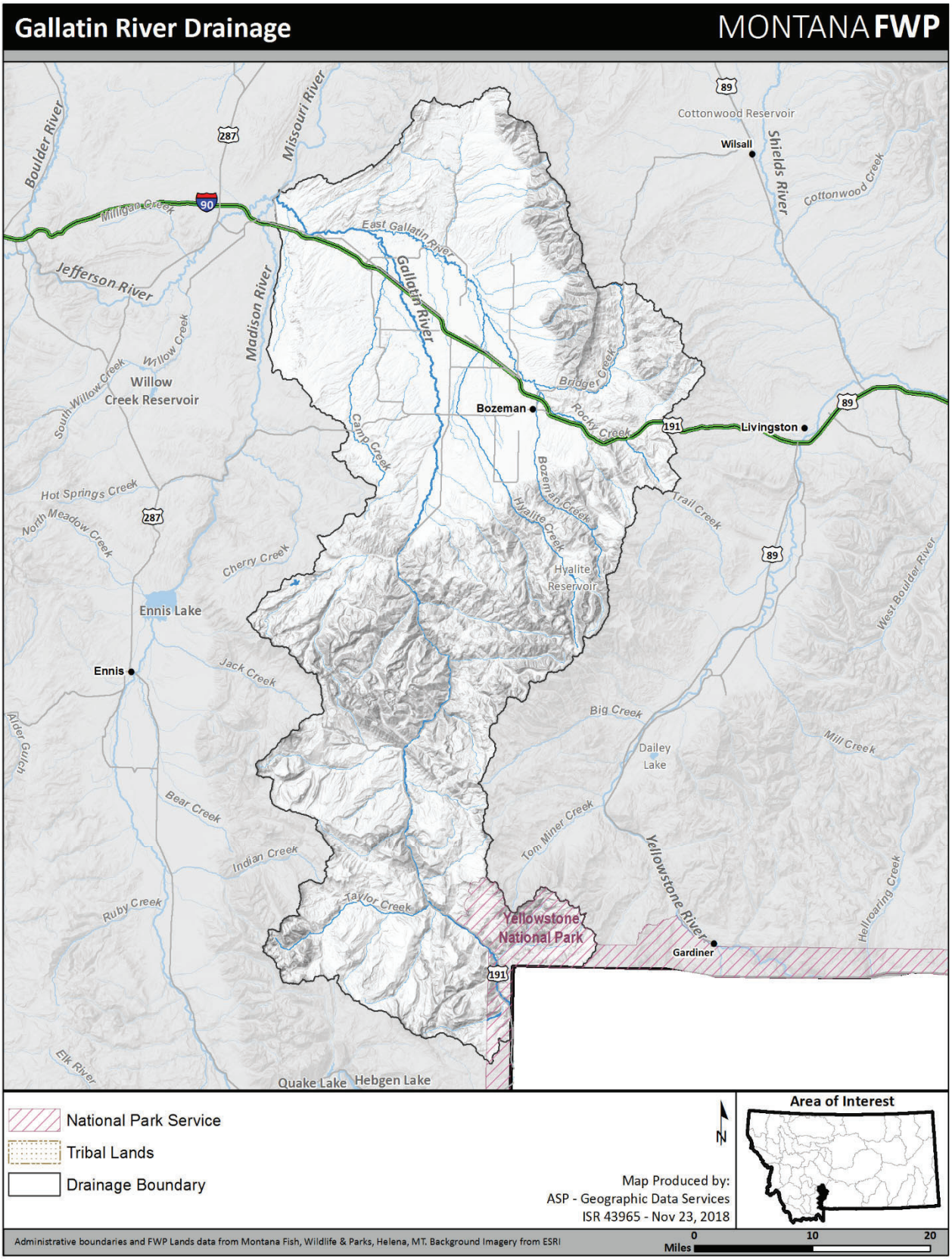
In 2010 the last nonnative fish were removed from Cherry Creek, a tributary of the lower Madison River. More than 60 miles of the stream above a high waterfall have been converted to a secure native westslope cutthroat trout refuge. Pure westslope cutthroat trout populations east of the continental divide are rare. The Cherry Creek project substantially increases the limited numbers of this special fish.

The Madison River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Madison River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR MADISON RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Madison River and Tributaries - Yellowstone National Park to Elk Creek	97.1 miles mainstem	Rainbow trout, Brown trout	Wild	General	Initiate regulation-change process to simplify regulations and allow for harvest opportunities while maintaining fish numbers and sizes.
		Mountain whitefish(N)	Wild	General	Continue to maintain numbers. Research has been initiated to understand population size and trend.
Hebgen Lake	12,564 acres	Rainbow trout	Wild/ Hatchery	General/ Grow and Take	Continue to manage Hebgen Lake as a wild rainbow trout fishery. Monitor long-term population trends with gill netting.
		Brown Trout, Mountain whitefish(N)	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
Ennis Lake	3,692 acres	Rainbow trout, Brown trout, Mountain whitefish(N)	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
		Arctic grayling(N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
Madison River and Tributaries - Elk Creek to Mouth	23.6 miles mainstem	Rainbow trout, Brown trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish numbers and sizes.
		Mountain whitefish(N)	Wild	General	Continue to maintain numbers. Research has been initiated to understand population size and trend.
Habitat needs and activities: Investigate approaches to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Madison River Tributaries	708.2 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue native species conservation to maintain or create viable, genetically unaltered, self-sustaining populations.
Mountain Lakes	49 lakes and 1,430 acres	Westslope cutthroat trout, Hybridized cutthroat trout, Yellowstone cutthroat trout, Rainbow trout, Brook trout, Arctic grayling	Wild/ Hatchery	Put, Grow and Take/ General	Continue to manage stocking and harvest to maintain fish numbers and sizes.


Gallatin River Drainage
MONTANA FWP
Boulder River
Missouri River
Cottonwood Reservoir
Wilsall
Shields River
Cottonwood Creek
Milligan Creek
East Gallatin River
Gallatin River
Jefferson River
Madison River
Willow Creek
South Willow Creek
Willow Creek Reservoir
Bridger Creek
Bozeman
Rocky Creek
Livingston
Camp Creek
Bozeman Creek
Hyalite Creek
Trail Creek
Hot Springs Creek
North Meadow Creek
Cherry Creek
Hyalite Reservoir
West Boulder River
Ennis Lake
Ennis
Jack Creek
Big Creek
Dailey Lake
Mill Creek
Alder Gulch
Bear Creek
Tom Miner Creek
Yellowstone River
Indian Creek
Taylor Creek
Ruby Creek
Yellowstone National Park
Gardiner
Hellroaring Creek
Elk River
Quake Lake
Hebgen Lake
National Park Service
Tribal Lands
Drainage Boundary
Area of Interest
Map Produced by:
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ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

GALLATIN RIVER DRAINAGE

PHYSICAL DESCRIPTION

The free-flowing Gallatin River originates at Gallatin Lake in Yellowstone National Park at an elevation of 8,834 feet. It flows north for 115 miles to Three Forks, Montana, where it joins the Madison and Jefferson Rivers to form the Missouri River. From the Park boundary, the river flows about 44 miles through the narrow Gallatin Canyon, and then enters the broad Gallatin Valley, where it flows an additional 45 miles to its mouth. Much of the Gallatin River is classified "Blue Ribbon" by FWP in recognition of its high recreational, fishery, and aesthetic values.

Many factors contribute to the popularity of the Gallatin River with anglers and other recreationists. Much of the river is surrounded by public lands, making it readily accessible to recreationists. The river is also near a rapidly growing population center and is paralleled by a main highway route to Yellowstone National Park. Above all, the natural beauty of the river and surrounding mountains attracts recreationists.

There are 33 natural lakes and reservoirs in the drainage totaling 434 surface acres. Most natural lakes are mountain lakes in the headwaters of the Gallatin River. The largest reservoir in the drainage is Hyalite Reservoir south of Bozeman. Lowland lakes in the valley bottom support urban fisheries which consist of put-and-take rainbow trout and illegally introduced warm water fish of various species. High mountain lake fisheries are either stocked on a regular basis or contain self-supporting populations of westslope cutthroat trout, brook trout, golden trout, or Arctic grayling.

FISHERIES MANAGEMENT

The Gallatin drainage is home to a variety of native fish species including; mountain whitefish, longnose dace, longnose suckers, Rocky Mountain Rocky Mountain sculpin, mountain sucker, white sucker, and westslope cutthroat trout. Several nonnative fish species are also found in the drainage and include: brown trout, brook trout, rainbow trout and Yellowstone cutthroat trout.

Most streams in the drainage are managed for nonnative self-sustaining wild trout fisheries. These trout populations are currently stable from year to year. Only one pure population of native westslope cutthroat trout exists in the drainage. Hybridized (westslope cutthroat with rainbow trout) populations exist in a few headwaters streams.

Common to many southwestern Montana rivers, fish stocking records for the Gallatin River are documented to begin in the 1920s and extended into the early 1970s when wild trout management philosophies were instituted. The primary fish stocked into the Gallatin River drainage has been rainbow trout; however, undesignated cutthroat trout were stocked between the 1930s and 1950s. Arctic grayling were stocked into the Gallatin River during the mid 1990s and early 2000s in an effort to establish self-sustaining populations. No natural reproduction was detected in the Gallatin River, and restoration efforts were terminated. Hyalite Reservoir is stocked annually with Yellowstone cutthroat trout.

Fishing regulations for streams in the Gallatin drainage are covered under Central District Standard limits and seasons, with three exceptions. These provide that: 1) fishing from boats or vessels from the Yellowstone National Park boundary to the East Gallatin River is not allowed; 2) the river is open to fishing during the entire year; and 3) there is no limit on northern pike to help prevent their establishment.

Angling use on the Gallatin River is high, and over the past decade has varied from 69,254 angler days in 2001 to 93,365 angler days in 2009. During the same time period, angler use of the East Gallatin River has varied from 5,512 angler days in 2007 to 11,679 angler days in 2005, while angler use of Hyalite reservoir has varied from 8,517 angler days in 2001 to 18,511 angler days in 2009. Plowing snow on the Hyalite Reservoir road during winter by the USFS has increased fishing pressure during the winter months.

HABITAT

The Gallatin River drains an area of 11,000 square miles, all above 4,000 feet. Most of the drainage basin above 5,000 feet is covered with coniferous forest, while the basin below 5,000 feet consists primarily of the Gallatin Valley, one of the richest agricultural regions in Montana.

Much of the upper 70 miles of the Gallatin River are surrounded by public lands within Yellowstone National Park and the Gallatin National Forest. This section, except for the uppermost 12 miles, is closely paralleled by US 191, which provides easy access to the river. Dude ranches, lodges and USFS campgrounds are scattered throughout the area. The steady rise in recreational and home site development and tourism is expected to have considerable impact on the canyon area in future years.

The lower 45 miles of river flow primarily through private lands within the Gallatin Valley. Access to the lower river is obtained through private lands, state fishing access sites and at bridge crossings. Bozeman, which is seven miles from the river at the closest point of contact, is the largest population center in the drainage.

The narrow canyon reach of the upper Gallatin generally exhibits good water quality and quantity. Stream habitat in the upper drainage is in good condition although the Taylors Fork contributes enough sediment after rain storms to muddy the mainstem Gallatin well downstream. Once the Gallatin leaves the canyon it begins to suffer from dewatering for irrigation and habitat concerns such as bed and bank manipulations. Low water levels, sedimentation, and high water temperature limit the trout population in the lower river. This trend is also found in the East Gallatin River drainage, with generally fish-friendly conditions in the upper tributary streams and conditions worsening in the lower river.

FISHING ACCESS

There are no FWP FASs from the Yellowstone National Park Boundary to the mouth of the Gallatin Canyon; however, public land (mostly federal) and access provided from U.S. Highway 191 provide ample opportunity for anglers to access the Gallatin River within the Canyon Reach. In the lower Gallatin River, eight FWP Fishing Access Sites provide angler access between the Canyon and the confluence with the Madison and Jefferson Rivers near Three Forks. The East Gallatin River has one FWP Fishing Access site.

Special Management Issues

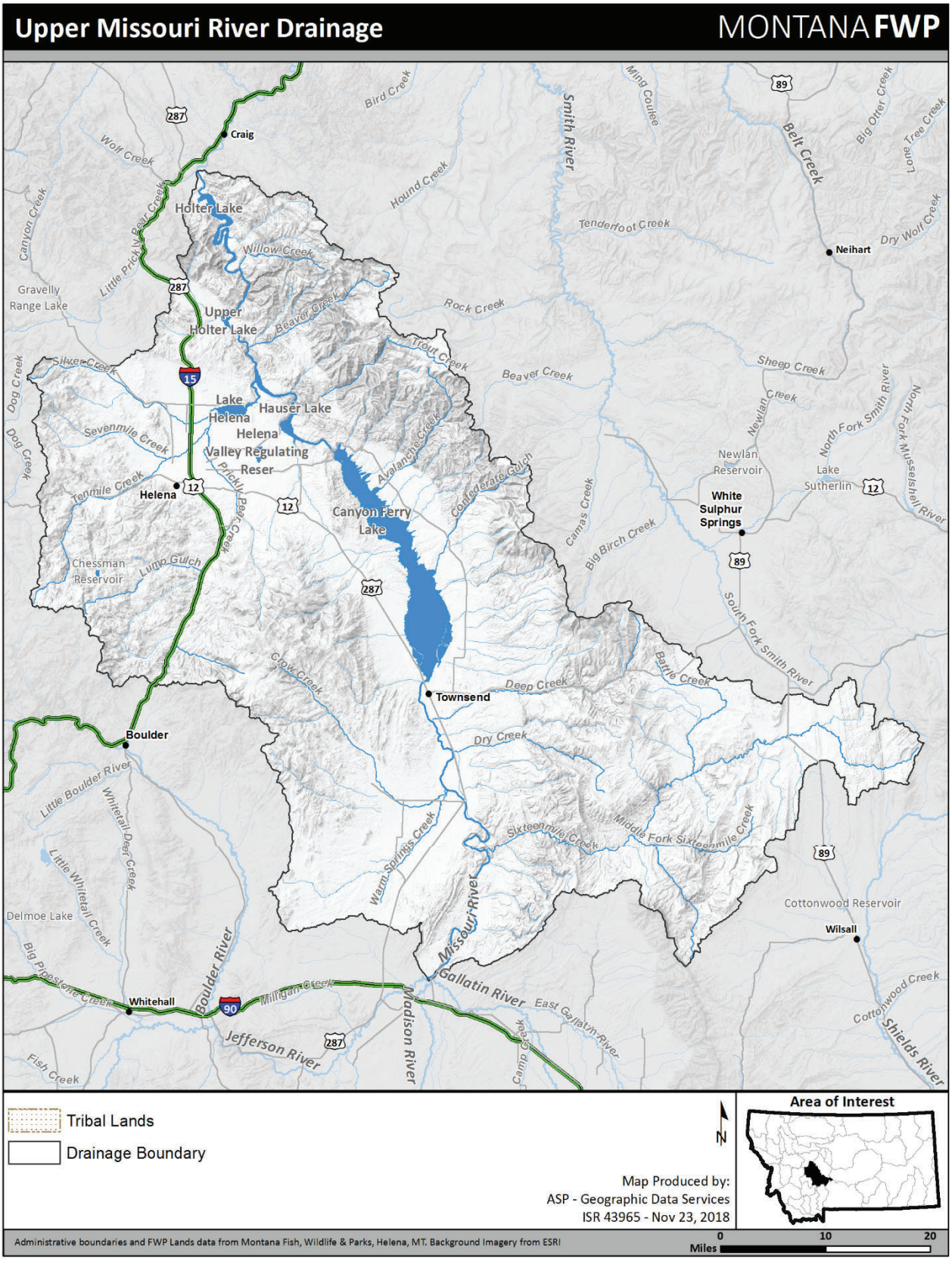
Hyalite Reservoir and other Gallatin River tributaries south of Bozeman provide municipal water for the City of Bozeman. Expansion of the human population in Bozeman and the surrounding area has caused concern over the ability of existing sources (primarily Hyalite Reservoir) to satisfy municipal demand of water. Possible impacts include the development of additional water storage (a new reservoir; potentially in Sourdough Creek) for municipal use.

The Gallatin River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Gallatin River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR GALLATIN RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Gallatin River and Tributaries (YNP to Shed's Bridge FAS)	56.1 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Gallatin River and Tributaries (Shed's Bridge FAS to Confluence with Missouri River)	32.7 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Habitat needs and activities: Improve instream-flow conditions, investigate alternatives to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					
East Gallatin River and Tributaries (Headwaters to Thompson Spring Creek)	25.6 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
East Gallatin River and Tributaries (Thompson Spring Creek to Mouth)	18.6 miles in mainstem	Rainbow trout, Brown trout	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Mountain whitefish (N)	Wild	General	Continue to maintain population. Initiate research and monitoring to better understand population size and trend.
Habitat needs and activities: Improve instream-flow conditions, investigate alternatives to improve spawning and rearing habitat (tributaries), maintain form and function of river channel by preventing degradation from bank stabilization, continue to allow stream access to floodplain, allow natural channel migration, and maintain healthy riparian plant community.					
Hyalite Reservoir	158 acres	Yellowstone cutthroat trout	Wild/ Hatchery	Put, Grow and Take	Continue to manage stocking and harvest to maintain present sizes and numbers.
		Arctic grayling	Wild	Conservation	Continue monitoring population trends.
		Brook trout	Wild	General	Continue to monitor population trends.


Upper Missouri River Drainage
MONTANA FWP
Craig
Holter Lake
Upper Holter Lake
Lake Helena
Hauser Lake
Helena Valley Regulating Reser
Canyon Ferry Lake
Helena
Townsend
Boulder
Whitehall
Neihart
White Sulphur Springs
Newlan Reservoir
Lake Sutherlin
Chessman Reservoir
Gravelly Range Lake
Delmoe Lake
Cottonwood Reservoir
Wilsall
Bird Creek
Wolf Creek
Canyon Creek
Little Prickly Pear Creek
Hound Creek
Smith River
Ming Coulee
Belt Creek
Big Otter Creek
Tree Creek
Tenderfoot Creek
Dry Wolf Creek
Willow Creek
Rock Creek
Beaver Creek
Trout Creek
Sheep Creek
Newlan Creek
North Fork Smith River
North Fork Musselshell River
Silver Creek
Dog Creek
Sevenmile Creek
Tenmile Creek
Prickly Pear Creek
Avalanche Creek
Confederate Gulch
Camas Creek
Big Birch Creek
Lump Gulch
South Fork Smith River
Crow Creek
Deep Creek
Battle Creek
Dry Creek
Little Boulder River
Whitetail Deer Creek
Little Whitetail Creek
Big Prestone Creek
Boulder River
Warm Springs Creek
Sixteenmile Creek
Middle Fork Sixteenmile Creek
Missouri River
Gallatin River
East Gallatin River
Madison River
Jefferson River
Milligan Creek
Fish Creek
Camp Creek
Cottonwood Creek
Shields River
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

UPPER MISSOURI RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Missouri River drainage includes the Missouri River and tributaries from the confluence of the Jefferson, Madison and Gallatin rivers (near the town of Three Forks), downstream 110 river miles to Holter Dam. The upper river reach extends from the headwaters 43 river miles to the upper end of Canyon Ferry Reservoir. Toston Dam, located 23 miles upstream from Canyon Ferry, is a barrier to upstream fish movement. The dam creates a small, run-of-the-river irrigation storage reservoir that has been retrofitted for hydro-power generation.

Riparian vegetation is limited to a narrow band along the river, except for the lower 10 miles above Canyon Ferry Reservoir where the river channel is braided and the bottomland is extensively vegetated with willows and cottonwoods. Width of the channel varies from 300 to 1,200 feet, the average gradient is 5.6 feet per mile, and the sinuosity is 1.6. Bottom substrate varies from sand-silt to cobble, but the majority is gravel-cobble. Tributaries originate mainly from the east and most are totally diverted during late summer for irrigation. Major tributaries of the Missouri River between Three Forks and Canyon Ferry Reservoir include Sixteenmile, Deep, Dry, Crow, Sixmile, Indian, Greyson and Warm Springs creeks. Many of these tributaries are chronically dewatered during late summer for irrigation. Water to irrigate about 555,400 acres is diverted above this reach. Thus, flow can be severely depleted during the summer irrigation season. Flows in this reach are partially regulated by a number of upstream reservoirs.

The remainder of the mainstem of this drainage is dominated by a reservoir complex that includes three reservoirs: Canyon Ferry, Hauser, and Holter. Canyon Ferry Reservoir is the first major storage impoundment on the Missouri River. Hauser and Holter reservoirs lie about 3 and 30 miles downstream from Canyon Ferry, respectively. Canyon Ferry Dam and Reservoir is operated by the BOR for power production, flood control, irrigation, recreation, and as a municipal water source. At full pool, Canyon Ferry has a surface area of 35,200 acres and a volume of nearly 2 million acre-feet and provides virtually all the storage available in the reservoir complex. Rapid filling of the reservoir begins in early May with peak storage occurring in late June to early July. Major tributaries to the reservoir include Duck Creek, Confederate Gulch, Hellgate Creek, Avalanche Creek, Magpie Creek, and Beaver Creek. The two reservoirs below Canyon Ferry are Hauser and Holter and are operated by NorthWestern Energy. They differ significantly from Canyon Ferry Reservoir in that they are “run-of-the-river” facilities. Hauser Reservoir has a surface area of about 3,800 acres and stores approximately 98,000 acre-feet of water at full pool. The reservoir is about 15.5 miles in length and is relatively narrow, ranging from about 0.1 to 1.1 miles in width. Important tributaries to Hauser Reservoir include Prickly Pear, Silver, Trout, Spokane and McGuire creeks. A biologically important feature of Hauser is Lake Helena, which is a large (surface area of 2,100 acres), shallow water body connected to the Causeway Arm by a narrow channel which was created when Hauser Dam inundated the lower reach of Prickly Pear Creek.

A 4.6-mile reach of the Missouri River is located between Hauser Dam and Holter Reservoir. This unique segment of river flows through a narrow, high-walled gorge for most of its length prior to entering upper Holter Reservoir. Productivity in this river segment is affected by the two

upstream reservoirs, which creates tailrace conditions where water temperatures are moderated and the water is enriched with nutrients.

Holter Reservoir has a surface area of about 4,800 acres, stores 243,000 acre-feet of water at full pool and is 25 miles long with widths ranging from 0.1 to 1.1 miles. The 4.6 mile segment of free flowing river located upstream of Holter Reservoir provides very important spawning habitat to migrant salmonids. Beaver Creek, a tributary to this river segment, is the principal spawning stream for reservoir fish, especially in the spring. Cottonwood and Willow creeks are also important tributaries that empty directly into Holter Reservoir.

FISHERIES MANAGEMENT

The Missouri River drainage contains fish species common to southwestern Montana. The native species found here include westslope cutthroat trout, mountain whitefish, mountain sucker, longnose dace, longnose sucker, Rocky Mountain sculpin, stonecat and white sucker. Nonnative species are rainbow trout, brown trout, brook trout, northern pike, smallmouth bass, largemouth bass, yellow perch, walleye and common carp. Hybrids of rainbow trout and westslope cutthroat trout are also found in the drainage.

The Missouri River upstream from Toston Dam has sparse fisheries resources, due to the poor quality of the river system in terms of temperature and physical habitat, and is managed as a wild trout fishery, emphasizing natural reproduction. The Missouri River from Toston Dam to Canyon Ferry Reservoir is managed as a naturally reproducing trout and walleye fishery. The basin is also suitable for westslope cutthroat trout recovery efforts in many locations. Up until the early 1990s, the fishery downstream from Toston Dam was seasonal and characterized by spawning runs of large rainbow and brown trout from Canyon Ferry Reservoir; however, resident brown trout fishing was also an attraction during this time period. Then, a variety of factors began to modify the composition of the fish community, including the expansion of walleye into Canyon Ferry Reservoir, changes in temperatures and flow, hydroelectric retrofits of Toston Dam, expansion of pelicans and cormorants, whirling disease, and the introduction of northern pike in Canyon Ferry Reservoir. All of these factors caused a significant reduction of spawning trout in the Missouri River downstream from Toston Dam, and as a result, angling use for trout has declined substantially. Conversely, angling use for walleye has increased as a migratory proportion of the Canyon Ferry Lake walleye population has become seasonally abundant in spring and fall in this 23 mile stretch of the Missouri River.

Over the past decade, angler use of the Missouri River reach downstream from Toston Dam has varied from 2,594 angler days in 2005 to 10,635 angler days in 2015. Upstream from Toston Dam to the confluence of the Madison and Jefferson rivers, angling pressure over the past decade has varied from 1,564 angler days in 2007 to 3,837 angler days in 2001. The Central Fishing District Standard regulations govern the Missouri River upstream from Canyon Ferry Reservoir. Exceptions include restricted harvest opportunities for brown trout, no limit on northern pike, and size and number exceptions for walleye downstream from Toston Dam.

Common to many southwest Montana rivers, fish stocking records for the Missouri River were documented beginning in the 1920s, and lasting through the early 1970s, when wild trout management philosophies were instituted. Beginning in the late 1920s, rainbow trout, brook trout, brown trout, kokanee salmon, Chinook salmon, coho salmon and Arctic grayling were

stocked. Fish stocking for the purpose of augmenting fisheries ended in the 1950s and 1960s. New sport-fish introductions (salmon species) occurred in early 1970s and conservation stocking projects were initiated in the 1990s and early 2000s to reintroduce brown trout and Arctic grayling, respectively.

Combined, the upper Missouri River reservoir system averaged over 8% of the fishing pressure in Montana from 2001-2015. These reservoirs traditionally are in the top 5 most heavily fished waters in Montana with Canyon Ferry averaging 97,072 angler days (1989-2015), Hauser averaging 54,476 angler days (1989-2015) and Holter averaging 64,398 angler days (1989-2015). This level of pressure equates to an average 2.8 angler days per acre on Canyon Ferry, 14.3 angler days per acre on Hauser, and 13.4 days per acre on Holter. Canyon Ferry was the most heavily fished water in Montana in 1989, 1993, 1995, 1999, and 2009 and is consistently the top flatwater fishery in Montana. Hauser Reservoir was the most heavily fished body of water in the state in 1991, which was attributable to a booming kokanee salmon population that resulted in a record 141,000 kokanee harvested in 1991. Over the entire reservoir system, angler use generally trended downward from 1999-2007, and use generally trended upward from 2009-2015. Angler use in the system peaked at 315,558 angler days in 2009, accounting for 9.4% of all angler use in Montana that year.

A variety of important fish species are present within the reservoir system. Rainbow trout, kokanee salmon, yellow perch, brown trout, burbot (ling), and walleye are among the species of greatest interest to the public. Downstream movement of hatchery rainbow trout from Canyon Ferry to Hauser and Holter reservoirs has been documented during periods of high surface water releases and flushing of walleye out of Canyon Ferry has heavily influenced species composition in the downstream reservoirs.

HABITAT

Toston Dam, located 23 miles above Canyon Ferry Reservoir and 6 miles southeast of Toston, is owned and operated by DNRC. It is a small, run-of-the-river irrigation storage reservoir that stores 3,000 acre-feet at full pool and was retrofitted with a 10-megawatt hydro-power generating plant in the 1980s. It has little influence on flows in the Missouri River downstream but does function as a barrier to upstream migrating fish.

Canyon Ferry Reservoir has a significant impact on the flows of the Missouri downstream to Fort Peck Reservoir. Its typical operation provides benefits to a tailwater trout fishery downstream of Holter Dam but presents challenges to development and stability of some reservoir fisheries due to fluctuating water levels. Rapid filling of the reservoir begins in early May, with peak storage occurring in late June to early July, followed by a steady decrease of about 2 feet per month during the summer period of high irrigation use (July-September). A decrease in reservoir volume continues throughout the fall and winter in preparation for storage of spring run-off. The retention time of water in the reservoir averages 135 days, but ranges from 50-200 days depending on reservoir elevation and inflow-outflow regimes. The annual water level fluctuation (drawdown) averages about 12 feet. Canyon Ferry Reservoir is typically drawn down to its minimum level in March, and then is refilled during the March to June period. A reservoir operations steering committee comprised of FWP, NorthWestern Energy, BOR, irrigators, and sportsmen, has developed operational guidelines for Canyon Ferry Reservoir to

balance recreational values and minimize impacts to fish and wildlife. This committee meets annually to review operational issues.

Discharge from Canyon Ferry Dam occurs at various outlets: the radial gates near the top of the spillway (30 feet deep); power penstocks (94 feet); the irrigation outlet (110 feet); and the river outlet (147 feet). The power penstocks are usually the main release point, except in spring and summer when additional releases are made from the spillway, irrigation, and river outlets. Releases from the radial gates typically occur during June and July following peak river run-off. Radial gate spills occur in roughly two out of every three years, with an average duration of 30-45 days. Temperature and oxygen content of the release water can vary depending on what outlets are used and the time of year.

Hauser Dam is a straight concrete gravity structure, 700 feet long and 80 feet above the riverbed. The structure consists of an overflow spillway, a non-overflow section, a forebay intake section and two abutment sections. The spillway is 493 feet long with slide gates and removable flashboards for flow control. Hauser Dam has the lowest powerhouse capacity of the three dams (19 megawatts) in the reservoir complex and consequently, spills the most water. Turbine water enters a 32-foot-deep intake channel on the east side of the dam. The six-penstock intakes draw from this channel with the openings from 16 to 30 feet below full pool. Water is spilled from five hydraulic gates and 17 manually operated gates. Water that is spilled is drawn from 0-14 feet below full pool. In a dry year, water may spill as much as 4-5 months of the year, while in a wet water year, water is spilled every day of the year. Water elevations of the reservoir are to fluctuate within a 1 foot elevation, so flows from tributaries and discharge from Canyon Ferry are passed through the facility, and it is operated as a run-of-the-river plant.

Holter Dam is also a straight concrete gravity structure, which is 1,364 feet long and 124 feet above the riverbed. The structure consists of an overflow spillway section, a powerhouse/intake section, a left non-overflow section and a right non-overflow section. It has a usable storage of approximately 81,920 acre-feet. Penstocks are between 24-32 feet below full pool. In addition, an “exciter” unit is always operating, which has a penstock opening from 25-29 feet below full pool. Water is spilled from a depth of 6-16 feet. In very high water conditions, a “cap” can be removed from the spill gates allowing the top six feet of water to be spilled. In a dry year, water may be spilled only one day, while in wet water years, spilling may occur throughout most of the year. Operation of Holter Dam has a significant impact on the fishery, wildlife and recreational resources of the reservoir and downstream as was experienced in 1986 when flows shut down. As part of the FERC re-licensing process, operational guidelines were developed for Holter Reservoir to be operated as a run-of-the-river project with pool elevations maintained within one foot between 3,543 and 3,564 feet msl. Prior to the implementation of the operating guidelines, a steering committee composed of FWP, Montana Power Company, BOR, USFS, irrigators, and sportsmen formulated operational guidelines for Holter Dam to optimize recreational values and to minimize impacts to fish and wildlife. The steering committee recommendations for the operation of Holter Dam include: 1) provide a stable reservoir level, 2) have no large spills (10,000 cfs, total turbine and spill) in August or September; and 3) accomplish facility maintenance drawdowns in March or during September (after Labor Day) through October 15. Adherence to these recommendations and the operating guidelines still serve to protect fisheries habitat today in both the reservoir and the trout fishery immediately downstream.

Fishing Access

The reach on the Missouri River above Canyon Ferry Reservoir has good access for recreationists, and access points are well placed for floaters. These points include the Toston, York's Island and Townsend fishing access sites. In addition, ample opportunities for walk-in access exist within the Canyon Ferry Wildlife Management area.

The reservoir complex has good access for recreationists and access points are well placed for boaters and campers. The BOR, Broadwater County, and private marinas provide access to Canyon Ferry Reservoir throughout its length. The BOR manages recreational areas, including campgrounds, boat ramps, and day-use areas around the reservoir. FWP administers six FAS's on Hauser and Lake Helena. The BLM also has two recreation areas that provide access to Hauser and Lake Helena, and three recreation areas that provide access to Holter Lake.

Special Management Issues

Unauthorized introductions of predatory species have significantly changed the characteristics of the fishery throughout this drainage. The Upper Missouri River Reservoirs Fisheries Management Plan 2010-2019 guides management within the plan area, which extends from Toston Dam through the reservoir complex down to Holter Dam, including short sections of the Missouri River between Canyon Ferry Reservoir and Toston Dam. The reservoir management plan is undergoing review with expected implementation in 2019. In 2012, FWP initiated an environmental assessment to remove northern pike from the entire basin upstream from Holter Dam.

The Upper Missouri River drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Upper Missouri River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

MANAGEMENT DIRECTION FOR UPPER MISSOURI RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Madison and Jefferson Rivers to Toston Dam	22 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain present numbers and sizes. Consider increasing angler harvest to reduce numbers if necessary to maintain fish growth.
		Northern pike	Wild	Suppression	Continue to allow unlimited harvest to minimize impacts on other sport fishes.
Habitat needs and activities: Continue to improve instream flow, by looking for opportunities to lease water or improve efficiency in irrigational infrastructure and methods.					
Sixteenmile Creek	69 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery with larger sized fish available to the angler.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Explore potential opportunities to restore habitat on some reaches.					
Missouri River – Toston Dam to Canyon Ferry Reservoir - See Upper Missouri River Reservoir Fisheries Management Plan	21 miles	Rainbow trout	Hatchery	General	Evaluate possible methods to restore migratory fishery in the river.
		Brown trout	Wild	Quality	Manage as a recreational fishery with little harvest.
		Mountain whitefish (N), Stonecat (N)	Wild	General	Maintain numbers within historic range.
		Northern pike	Wild	Suppression	Maximize harvest to minimize impacts on other wild & reservoir sport fishes.
		Walleye	Wild	Liberal Regulations	Manage walleye population consistent with Canyon Ferry Lake.
Habitat needs and activities: Maintain Instream Flows at 2,500 cfs to maintain side channel habitat. Look for opportunities to lease water or improve efficiency in irrigational infrastructure and methods.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Crow Creek	25.9 miles	Rainbow trout Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Manage to maintain a population.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs. Explore opportunities to improve chronic dewatering.					
Dry Creek	16.6 miles	Rainbow trout, Rb x WCT hybrids, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 1.8 cfs. Explore opportunities to improve chronic dewatering.					
Deep Creek	30.3 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 9 cfs. Explore opportunities to improve chronic dewatering and habitat restoration.					
Canyon Ferry Lake	35,200 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Brown trout	Wild	Quality	
		Walleye	Wild	Liberal Regulations	
		Yellow Perch	Wild	Restrictive Regulations	
		Burbot (N)	Wild	General	
		Northern Pike	Wild	Suppression	
Habitat needs and activities: Continue to explore opportunities for enhancement of forage fish spawning habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Confederate Gulch, Beaver Creek Duck Creek	17.1 miles 15.5 miles 15.0 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Magpie Creek	13.6 miles	Rainbow trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Hauser Lake/ Lake Helena	3,800 acres	Rainbow trout Brown trout Walleye Yellow perch Burbot (N) Northern pike	Hatchery Wild Wild Wild Wild Wild	Put, Grow and Take Quality Liberal Regulations Restrictive Regulations General Suppression	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
Helena Valley Regulating Reservoir	553 acres	Kokanee salmon Yellow perch Burbot (N)	Wild Wild Wild	Put, Grow and Take/ Liberal Regulations General General	Maintain recreational fishery for consumptive harvest by continued stocking. Maintain recreational fishery for consumptive harvest. Maintain population numbers with some consumptive harvest.

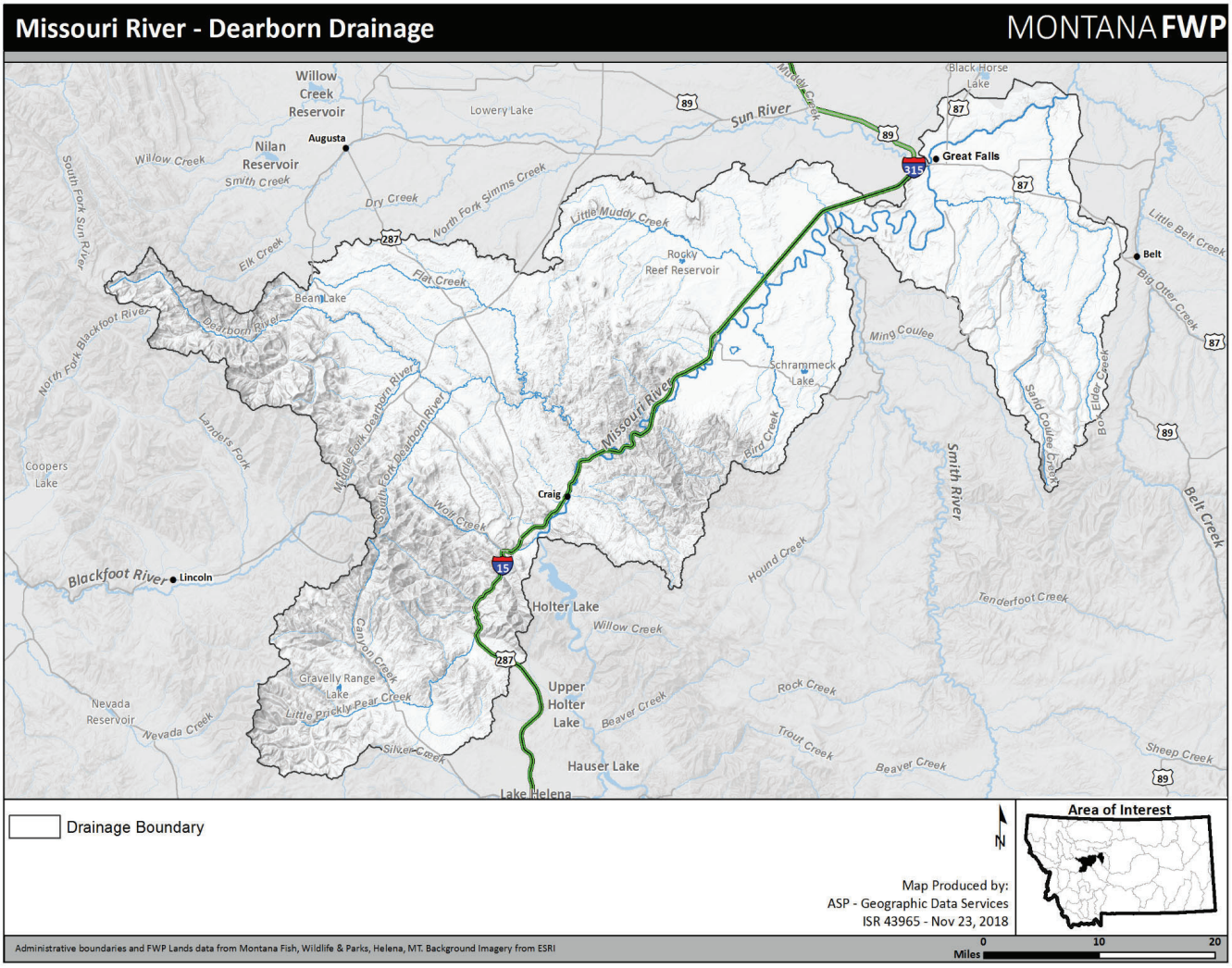
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Spokane Creek	2.8 miles	Rainbow trout, Brown trout	Wild	General	Manage as a recreational fishery and spawning stream for fluvial/adfluvial populations.
Habitat needs and activities: Maintain habitat and instream flows of 4 cfs from May 1-Nov 30 and 3 cfs from Dec 1-April 30. Explore opportunities for habitat restoration on public land.					
Trout Creek	9.0 miles	Rainbow trout, Brown trout Mountain whitefish (N)	Wild Wild	General General	Manage as a recreational fishery and spawning stream for adfluvial populations. Maintain population numbers.
Habitat needs and activities: Maintain habitat and instream flows of 15 cfs. Maintain access to stream for migrations of adfluvial fish and minimize habitat perturbations caused by road construction and riparian impact from housing development.					
Prickly Pear Creek	43.6 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Manage as a recreational fishery and spawning stream for adfluvial populations. Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 30 cfs below East Helena and 22 cfs above East Helena. Work to maintain agreements that have resulted in wetting chronically dewatered reaches. Maintain access to stream for migrations of adfluvial fish. Continue to cooperate in reducing pollution delivery and mining damage to the waterway above East Helena. Explore opportunities to increase public access and conserve riparian habitat.					
Silver Creek	23.5 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Maintain spawning and rearing for adfluvial populations. Maintain a recreational fishery with little harvest.
Habitat needs and activities: Maintain habitat and instream flows of 13 cfs from May 1 to Nov 30 and 5.4 cfs from Dec 1 to April 30.					
Tenmile Creek	29.4 miles	Rainbow trout, Brown trout Brook trout	Wild Wild	General General	Maintain a recreational fishery and spawning for adfluvial populations. Maintain a recreational fishery with some harvest.
Habitat needs and activities: Maintain habitat and instream flow of 12 cfs. Explore opportunities to reduce chronic dewatering in the lower reaches.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River – Hauser Dam to Holter Reservoir	4.6 miles	Rainbow trout	Hatchery/ Wild	Put, Grow and Take/ General	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Brown trout	Wild	Quality	
		Kokanee salmon	Wild	General	
		Walleye	Wild	Liberal or Restrictive Regulations	
		Yellow perch	Wild	General	
		Burbot (N)	Wild	General	
		Northern pike	Wild	Suppression	
Beaver Creek	18.6 miles	Rainbow trout	Wild	General	Maintain a recreational fishery and spawning for fluvial/adfluvial fish.
		Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with some harvest.
Habitat needs and activities: Maintain habitat and instream flows of 10 cfs. Explore opportunities for habitat restoration.					
Holter Lake	4,800 acres	Rainbow trout	Hatchery/Wild	Put, Grow and Take	Manage as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. See Upper Missouri River Reservoir Fisheries Management Plan for species goals, strategies, and targets.
		Kokanee salmon	Hatchery	Put, Grow and Take	
		Walleye	Wild	Restrictive/Liberal Regulations	
		Yellow perch	Wild	Restrictive Regulations	

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Burbot (N) Northern Pike	Wild Wild	General Suppression	
Willow Creek	9.8 miles	Rainbow trout, Brook trout	Wild	General	Maintain population numbers within historic levels for a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 3.5 cfs. Evaluate possible barrier sites that would allow establishing a WCT population in the upper reaches.					
Elkhorn Creek-Lower Reach	5.1 miles	Rainbow trout, Brook trout, Rb x WCT hybrids	Wild	General	Maintain population numbers within historic levels for a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flow of 3.5 cfs.					
Elkhorn Creek – Upper Reach	5.3 miles	Westslope cutthroat trout (N)	Wild/ Transfer	Conservation	Maintain population and expand distribution to occupy all habitat above barrier with genetically unaltered WCT.
Habitat needs and activities: Maintain habitat and instream flow of 3.5 cfs. Complete barrier and remove most hybridized fish above barrier.					
Cottonwood Creek	8 miles	Westslope Cutthroat trout (N)	Wild/ Transfer	Conservation	Maintain population and expand densities to occupy all habitat above barrier.
Habitat needs and activities: Install riparian fencing in headwater area on private land to improve riparian vegetation condition. Maintain habitat and instream flow of 1.0 cfs.					
Westslope cutthroat trout Genetically Unaltered Conservation Population Streams (Isolated Single Species populations)	56.9 miles	Westslope cutthroat trout (N)	Wild / Transfer	Conservation	Maintain or enhance populations to reduce extinction risk. When biologically feasible, in robust populations, provide for limited consumptive.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers to protect populations and opportunities to reduce fragmentation of WCT occupied habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope cutthroat trout Genetically Altered Conservation Population or Mixed Streams	36.1 Miles	Westslope cutthroat trout & hybrids	Wild/ Transfer	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Brook Trout Streams	624 Miles	Brook trout	Wild	General	Maintain or enhance populations for a recreational fishery for consumptive harvest.
Fairgrounds Pond	2 Acres	Rainbow trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Indian Road Pond near Townsend	2 Acres	Westslope cutthroat trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Spring Meadow Lake	14 Acres	Largemouth bass Rainbow trout, Westslope cutthroat trout	Wild Hatchery	Family Fishing Water Family Fishing Water	Maintain as an urban fishery. Maintain as an urban fishery.


Missouri River - Dearborn Drainage
MONTANA FWP
Willow Creek Reservoir
Lowery Lake
Augusta
Nilan Reservoir
Willow Creek
Smith Creek
Dry Creek
North Fork Simms Creek
Little Muddy Creek
Rocky Reef Reservoir
Sun River
Black Horse Lake
Great Falls
Belt
Little Belt Creek
Big Otter Creek
Elk Creek
Flat Creek
Beam Lake
Dearborn River
North Fork Blackfoot River
South Fork Sun River
Ming Coulee
Schrammeck Lake
Sand Coulee Creek
Box Elder Creek
Missouri River
Bird Creek
Middle Fork Dearborn River
South Fork Dearborn River
Landers Fork
Coopers Lake
Craig
Wolf Creek
Smith River
Belt Creek
Blackfoot River
Lincoln
Hound Creek
Tenderfoot Creek
Holter Lake
Willow Creek
Canyon Creek
Gravelly Range Lake
Little Prickly Pear Creek
Upper Holter Lake
Beaver Creek
Rock Creek
Nevada Reservoir
Nevada Creek
Silver Creek
Trout Creek
Hauser Lake
Lake Helena
Sheep Creek
Drainage Boundary
Area of Interest
N
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

MISSOURI RIVER - DEARBORN DRAINAGE

PHYSICAL DESCRIPTION

The Upper Missouri River drainage includes the Missouri River and tributaries from Holter Dam near Wolf Creek downstream nearly 105 river miles to Morony Dam, 15 miles northeast of Great Falls. This river reach spans nearly 93 miles from Holter to Black Eagle dam. Below Black Eagle Dam, the river is impounded by Rainbow Dam, creating a shallow run-of-the-river reservoir that is available for public fishing. Public boat access for fishing is not available downstream of Rainbow Dam, until downstream of Morony Dam. Stream gradient averages only about 2 feet/mile and varies from 7.84 feet/mile at Pine Island Rapids to 0.52 feet/mile near Ulm. The river is surrounded by the Big Belt Mountains to the southeast and the east front of the Rocky Mountains to the northwest. Small communities along the river include Craig, Hardy, Cascade and Ulm. The river channel upstream of the Dearborn River has extensive side channel development. It becomes confined and entrenched in a single, deep channel as it flows through a mountainous canyon to the mouth of Sheep Creek. The river then meanders across a wide and flat prairie zone into Great Falls. Riparian vegetation consisting of a willow understory/cottonwood overstory lines much of the lower river.

Major tributaries in this reach include Little Prickly Pear Creek, the Dearborn River, Sheep Creek, the Smith River and the Sun River. Minor tributaries include Rock, Wegner, Stickney, Hardy, Bird, Little Muddy, and Sand Coulee creeks. The tributaries add considerable flow to the Missouri during spring runoff, but contribute little flow during the remainder of the year.

River characteristics and flow in this section are heavily influenced by the three upstream hydroelectric dams, Canyon Ferry, Hauser, and Holter. Canyon Ferry dam is operated by the BOR for irrigation, hydropower, flood control, recreation, and as a supplemental water supply for the City of Helena. Hauser and Holter reservoirs lie downstream from Canyon Ferry and provide hydroelectric power. They are operated by Northwestern Energy as run-of-the-river projects, passing out the same flows that enter the reservoirs. Water management and storage practices at Canyon Ferry Dam, the largest of the three upstream reservoirs affects flows in this tailwater reach below Holter Dam. Annual mean flow measured below Holter Dam from 1946 to 2017 ranged from 3,008 to 8,497 cubic feet per second (cfs), while annual mean inflows to Canyon Ferry ranged from 2,830 to 7,742 cfs. The mean peak flow below Holter Dam for this period is 14,078 (range 3,370-34,800) compared to a mean inflow of 18,105 cfs (range 6,580-34,000) to Canyon Ferry. From 1999 through 2007, a drought in central Montana reduced peak flows in the Missouri River substantially below the long- term average. Annual mean flow measured near Ulm (9 river miles downstream from the confluence of the Smith River) from 1948 to 2011 was 6,247, and ranged from 3,479 to 9,653 cfs; the annual peak flow ranged from 5,300 to 35,000 cfs.

FISHERIES MANAGEMENT

Game fish species of the greatest interest to the public within this management area include rainbow and brown trout, mountain whitefish, walleye, and burbot (ling). The 35-mile reach from Holter Dam to Cascade Bridge is designated as one of Montana's premier river "Blue

Ribbon" trout fisheries. This reach supports an abundance of wild rainbow and brown trout, which are the dominant sport fish; the population includes trophy sized fish.

In most years since 1982, FWP fisheries staff has conducted population monitoring for rainbow and brown trout in two sections of the 35-mile river reach between Holter Dam and the town of Cascade (Craig study section = 5.6 miles, Cascade study section = 4.1 miles). Population estimates are derived using standardized methods, including night electrofishing to mark and recapture fish in the spring and fall. Estimates are based on trout 10 inches and longer.

In fall 2017, rainbow trout in the Craig section were estimated at 4,936 per mile. This estimate represents a decline from the peak estimate in 2012 but remains well above the long term 36-year mean of 3,394 rainbow trout per mile. The 2017 sampling event represents the seventh consecutive year of above average rainbow trout population estimates in the Craig section. Brown trout 10 inches and greater in the Craig section were estimated at 892 per mile in spring 2018, which is greater than the long-term average of 563. In the Cascade section, the estimate of rainbow trout 10 inches and greater was 1,592 per mile in fall 2017, which is similar to the 34-year mean of 1,616. In the Cascade section, the brown trout estimate was 297 fish 10-inches or greater per mile in spring 2018, which is less than the long-term average of 398 fish, but within the long-term range of data (135-909). Historically, mountain whitefish have not been monitored, due to logistical constraints with sampling. However, anglers have reported catching reduced numbers of mountain whitefish in recent years. FWP will conduct additional monitoring for mountain whitefish as conditions and workload allow.

Additionally, walleye and burbot are incidentally sampled during electrofishing operations. Over the period of record there have been changes in the number of walleye sampled in the Missouri River below Holter Dam. The increase in walleye production in Canyon Ferry Reservoir since 1994 appears to have resulted in an increase in walleye in the Missouri River below Holter Dam. However, no evidence has been gathered which suggests an ecological impact to trout in this reach at the population level. Many factors are present that could negatively affect trout populations, including increased densities of walleye, increase in angler use, prolonged drought conditions, and whirling disease infections. However, despite these factors in play for much of the past 25 years, trout populations appear resilient and show no evidence of decline. The FWP Commission established a "no limit for walleye" harvest regulation on the section of the Missouri River from Holter Dam to Cascade in 2011 as an effort to protect the rainbow and brown trout fishery.

Trout numbers drop markedly below Ulm largely due to habitat changes. Consequently, the proportional abundance of burbot and walleye in the fishery increases in this reach. However, trout still remain the dominant game fish. Other common species in this reach of the Missouri River include mountain whitefish, longnose and white suckers, carp, longnose dace, and Rocky Mountain sculpin.

Fishing pressure in the reach is heavy, with the tail water fishery from Holter Dam to Cascade Bridge always ranking among the top 4 fisheries throughout the state during the past 25 years (1991-2015). This section of river has averaged over 105,000 angler days per year since 1991. A large increase in the number of anglers was observed in 2013 with record high 170,850 angler days estimated compared to 105,986 in 2011. This section of the Missouri River again ranked number one in the state in 2015 when 183,479 angler days were estimated, surpassing the

previous high set in 2013. In 2015, the average annual revenue generated by this 35-mile reach of river was estimated at $66.6 million. Economic statistics for angler use are based on goods and services anglers purchased during a typical fishing trip, including food, gasoline, bait, lures, license, outfitter-guide fees and lodging. This exercise produces a conservative estimate of the economic value of an angler day because only expenditures for non-durable goods were included and not durable goods such as boats, waders, fishing rods and vehicles.

This section of the Missouri River is popular and heavily utilized for recreation due to both the characteristics of the fishery and the excellent access throughout much of the reach. A frontage road, Old Highway 91, which has officially been designated as a state Recreation Road, parallels much of the river downstream to Cascade. The river section downstream from the Wolf Creek Bridge contains eleven FWP Fishing Access Sites. From Cascade to Morony Dam, there are six more Fishing Access Sites and Giant Springs State Park. A majority of the existing recreational use of this reach of river is angling, but recreational floating is also popular seasonally. Other activities include picnicking, camping, trapping, and hunting.

FISHING ACCESS

The reach on the Missouri River below Holter Dam down to Cascade has good access for recreationists and access points are spaced out to provide many options for floaters. Old US Highway 91 parallels the upper reaches of the Missouri River below Holter Dam. There are 14 Fishing Access Sites managed by FWP and one site managed by the Bureau of Land Management; nine of these provide developed or undeveloped boat ramps and four provide access for bank anglers. Between Cascade and Black Eagle Dam, there are four access sites with boat ramps, two managed by FWP and one each managed by the City of Cascade and the City of Great Falls. Additionally, five FWP managed access sites in this reach provide access for bank fishing. Below Black Eagle Dam, a boat ramp provides access for small boats between Black Eagle and Rainbow Dam. FWP also administers two access sites on Little Prickly Pear Creek. Access on the Dearborn River is limited to public land in the headwaters and at bridges on US Highway 287, Highway 200, and Route 435. Also in the upper Dearborn drainage, there is an access site on Bean Lake, but it is currently used exclusively by campers since low water and high total dissolved solids prevent a fishery from being maintained in the lake.

HABITAT

Previous research conducted by the FWP indicated that trout, particularly brown trout, prefer side channels of the Missouri River, rather than the main channel, for spawning. The preference for side channels was apparently related to the presence of more suitable depth, velocity, substrate, and adjacent cover characteristics. These studies further indicated that Missouri River side channels are vital for the rearing of young-of-the-year (YOY) rainbow and brown trout until mid-October, when large numbers of YOY begin moving from the side channels to the main river. Side channels therefore appear to be vital year-round for trout spawning, the incubation of trout eggs, and the rearing of young. Observations indicate that habitat conditions and utilization of the side channels decline precipitously when flows recede below 4,100 cfs. At a flow of 4,100 cfs, 64% of the side channels contained adequate flow for trout spawning, incubation and rearing, while at 3,600 cfs only 9% of the side channels contained adequate flow. Consequently, whenever possible, a year-round minimum flow of 4,100 cfs is recommended to maintain

suitable conditions in side channels for trout spawning, incubation and rearing. If water supply conditions do not allow due to drought, managers strive to maintain 2,900 cfs to maintain mainstem riffle habitat.

Housing development along the river banks has resulted in numerous boat ramps, stairs, boat docks, rip rap, retaining walls and vegetation grooming in the upper and lower reaches of this section of the Missouri River. FWP has recommended the Conservation Districts (Lewis and Clark and Cascade) do not permit new boat ramps in the reach between Holter Dam and Cascade Bridge. Housing development in the lower 26 miles has increased and resulted in FWP making stronger recommendations against bank modifications to preserve river riparian habitat.

Special Management Issues

The Missouri Advisory Committee was established in 1983 when the then operator of Holter and Hauser dams, the Montana Power Company (MPC), was considering returning the operation of Holter Dam to a power peaking facility. It had been operated in that manner prior to the early 1970s. The committee addressed the peaking issue with members representing FWP, MPC (now Northwestern Energy), the BOR, outfitters, irrigators, and sporting clubs. The committee continues to meet annually to discuss and coordinate information regarding the fisheries, water supply and weather forecasts, and reservoir operations.

Operation guidelines were integrated into the Federal Energy Regulatory Commission (FERC) order issued as part of the Madison/Missouri River 2188 Project License that included Hauser and Holter dam operations designed to protect the fishery. In addition, Northwestern Energy has entered into an MOU with FWP to cooperate in implementation of the fisheries Protection, Mitigation and Enhancement Technical Advisory Group, which meets annually to discuss potential projects. Additionally, Northwestern Energy staff works closely with FWP to implement license orders and mitigation and enhancement projects.

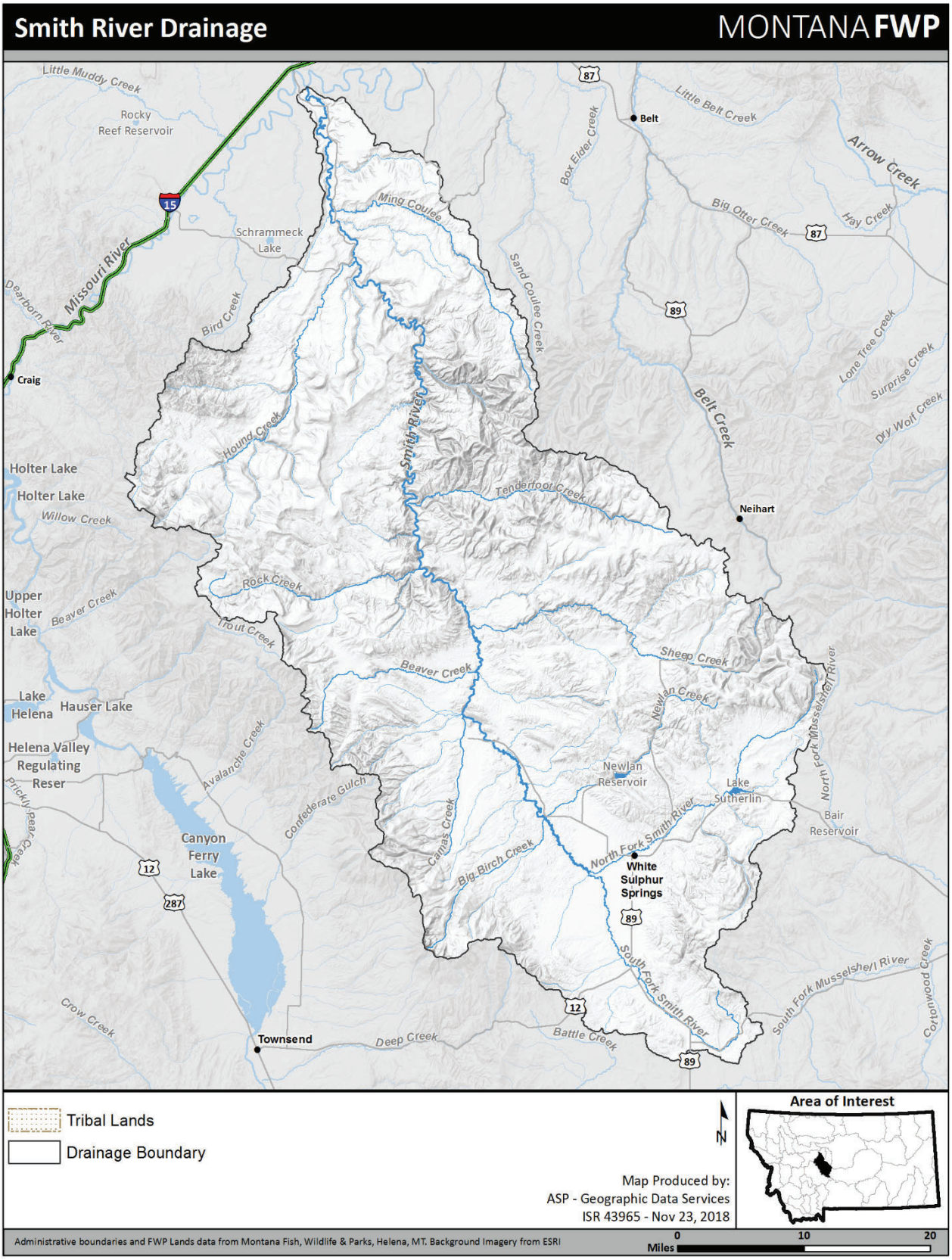
The Missouri River Fisheries Management Plan developed in May 1990, which officially guided management direction from 1990 through 1994, provides a partial history of management goals and actions for this reach of the river.

FISHERIES MANAGEMENT DIRECTION FOR THE MISSOURI RIVER- DEARBORN DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Holter Dam to Cascade Bridge	35 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Management priority is to maintain trout populations numbers within range observed since 1982 and with a sustainable proportion of larger sized fish available to anglers.
		Mountain whitefish (N)	Wild	General	Increase monitoring for mountain whitefish as conditions and workload allow.
		Walleye	Wild	Suppression	Maintain high harvest to protect wild trout fisheries. Recruitment primarily occurs from flushing from upstream reservoirs.
		Burbot (N)	Wild	General	Monitor population through hoop net sampling protocol.
Habitat needs and activities: Cooperate with water management agencies to maintain minimum flows of 4,100 cfs to maintain side channel habitat. During drought, strive to maintain minimum flows of 2,900 cfs to maintain mainstem riffle habitat.					
Little Prickly Pear Creek and tributaries	25.6 miles	Rainbow trout, Brown trout	Wild	General	Maintain resident and Missouri River spawning populations.
Habitat needs and activities: Maintain habitat and instream flows of 70 cfs below Clark Creek and 22 cfs above Clark Creek. Maintain access to stream for fluvial fish.					
Dearborn River and tributaries (South and Middle Forks)	73.3 miles	Rainbow trout, Brown trout	Wild	General	Maintain resident and Missouri River spawning populations.
		Mountain whitefish (N)	Wild	General	Maintain population numbers within historic range.
Habitat needs and activities: Work with water users to improve instream flow conditions in the drainage. Work with landowners to improve floating safety and maintain fences for livestock.					
Missouri River - Cascade Bridge to Black Eagle Dam	57.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain trout population numbers within historic range with a sustainable proportion of larger sized fish available to the angler.
		Mountain whitefish (N)	Wild	General	

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Walleye	Wild	Liberal Regulations	Maintain population numbers within historic range. As workload allows, determine limiting factors controlling the population level. Provide high harvest opportunities above the Central District standard daily and possession limits to protect wild trout fisheries.
Habitat needs and activities: Cooperate with water management entities/agencies to maintain minimum flows of 4.100 cfs					
Sheep Creek	2.0 miles	Rainbow trout	Wild	General	Maintain resident and Missouri River spawning populations.
Missouri River – Rainbow Reservoir	200 acres	Rainbow Trout Brown Trout	Hatchery, Wild Wild	General, Put and Take General	Manage as a recreational fishery with significant harvest. Manage as a recreational fishery.
Private/Public Ponds with public access		Trout warm water species	Hatchery/ Wild	Put and Take	Maintain existing pond fisheries available to the public for harvest.
Habitat needs and activities: Enhance structure in ponds when possible.					
Giant Springs Fishing Pond	0.3 Acres	Rainbow trout	Hatchery	Family Fishing Water	Maintain existing urban fishery for youth.


Smith River Drainage
MONTANA FWP
Little Muddy Creek
Rocky Reef Reservoir
Missouri River
Dearborn River
Craig
Schrammeck Lake
Bird Creek
Ming Coulee
Smith River
Hound Creek
Holter Lake
Holter Lake
Willow Creek
Upper Holter Lake
Beaver Creek
Rock Creek
Trout Creek
Lake Helena
Hauser Lake
Helena Valley Regulating Reser
Prickly Pear Creek
Avalanche Creek
Canyon Ferry Lake
Confederate Gulch
Crow Creek
Townsend
Deep Creek
Box Elder Creek
Sand Coulee Creek
Belt
Little Belt Creek
Arrow Creek
Big Otter Creek
Hay Creek
Lone Tree Creek
Surprise Creek
Dry Wolf Creek
Belt Creek
Tenderfoot Creek
Neihart
Sheep Creek
Newlan Creek
Newlan Reservoir
Lake Sutherlin
Bair Reservoir
North Fork Musselshell River
North Fork Smith River
White Sulphur Springs
Canas Creek
Big Birch Creek
South Fork Smith River
South Fork Musselshell River
Cottonwood Creek
Battle Creek
87
15
89
287
12
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

SMITH RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Smith River drainage lies in west-central Montana in Meagher and Cascade counties, almost due south of Great Falls between the Big Belt Mountains on the west and the Little Belt and Castle mountains on the east. The drainage is approximately 75 miles in length and the width varies from 3 to 45 miles. The total area is slightly over 2,000 square miles. The elevation of the floor of the drainage varies from 3,350 to 5,400 feet. The highest mountain peaks range from 8,500 to 9,500 feet.

The Smith River is formed by the junction of the North and South forks about 4 miles southwest of the town of White Sulphur Springs. The North Fork drains part of the southwest slopes of the Little Belt Mountains and the northwest slopes of the Castle Mountains. The South Fork originates along the southwest flank of the Castle Mountains and from the bench lands between the Castle and Big Belt mountains. Hot water springs occur in the confluence area between the North and South forks, as well as at the headwaters of the South Fork and serve to elevate water temperatures in reaches of the upper drainage. The mainstem of the Smith River then meanders northwesterly about 41 miles through a broad upper valley before entering a deep mountain canyon near the confluence of Sheep Creek. The river twists north for approximately 45 miles between high limestone cliffs and conifer and grass-covered mountains before flowing another 12 miles through foothill grasslands. After Hound Creek enters the Smith, the river meanders another 24 miles through a relatively narrow, agriculturally developed valley flanked by rolling grasslands until it joins the Missouri River near the town of Ulm about 11 miles west of Great Falls.

In the early 1860s, the discovery of gold in the surrounding mountains stimulated a heavy influx of miners. As gold was depleted and mining operations abandoned, farming and ranching began to take over as the predominant land use in the basin, and they remain so today. Logging and recreation are other important land uses in the drainage.

Approximately 125 tributaries originate in the Big Belt and Little Belt mountains to join the Smith River. Some of the major tributaries originating in the Big Belt Mountains are Birch, Camas, Beaver, Rock, and Hound creeks. Those from the Little Belt Mountains are Newlan, Sheep, Eagle, Tenderfoot and Deep creeks.

Major reservoirs in the Smith River drainage include Newlan Creek and Smith River (Sutherlin) reservoirs. Both are in the Little Belt Mountains. High mountain lakes in the drainage are located in the Big Belt Mountains and include Edith, Grace, Hidden, and Upper Baldy Lakes. Other lakes with fisheries management/recreational importance include Crater and Gipsy lakes. In total there are 15 lakes or reservoirs and 801 surface acres in the drainage.

FISHERIES MANAGEMENT

The Smith River drainage holds about 1,220 miles of perennial streams, including approximately 100 named streams. There are approximately 741 miles of habitat capable of supporting salmonid fishes in the Smith River drainage.

Between 1928 and 1973, approximately 3.5 million introduced trout were stocked in the mainstem Smith River. Tributaries to the river were also stocked with large numbers of introduced trout for many years prior to 1973. The Smith River is a nationally known trout fishery and has been managed as a wild trout fishery since 1974, when the stocking of trout was discontinued.

Brook trout tend to dominate smaller, higher elevation streams, while rainbow trout and brown trout dominate the higher order, lower elevation streams. The majority of extant populations of westslope cutthroat trout in the Smith River drainage reside in high elevation streams on national forest land; six populations of pure westslope cutthroat trout occupy less than 2% of the historic range in the drainage.

Much of the life history of fish and habitat use in the Smith is not well known. Recent telemetry work has shown a high rate use of the Smith River basin by rainbow and brown trout tagged in the Missouri and Sun rivers between Ulm and Great Falls. A basic biological survey defining life history strategies in the mainstem and tributaries along with an inventory of potential habitat problems would provide critical information to enhance and protect the existing fisheries. This effort was started with a graduate research project evaluating life history strategies of trout and whitefish in the Tenderfoot Creek. A subsequent and ongoing graduate research effort has expanded on this research to evaluate life history strategies of trout and whitefish throughout the drainage. Preliminary results demonstrate the importance of major tributaries, such as Tenderfoot and Sheep creeks, in supporting the fishery in the Smith River.

In fall 2017, densities of rainbow and brown trout (8 inches and larger) in the Eagle Creek section of the Smith River were estimated at 387 and 361 per mile, respectively. The mean for this section, which is located several miles downstream from Camp Baker, based on 38 years of data (1969 to 2017) is 483 rainbow trout and 290 brown trout per mile. The Deep Creek section, also located near the bottom of the canyon reach, has not been sampled in recent years. Trout populations tend to be lower there compared to those upstream in the Eagle Creek section. The mean number of rainbow and brown trout per mile are 168 and 270, respectively, based on 20 years of data gathered from 1970-2006. A new section was sampled on the Smith River in 2015 and 2016 at the Cascade-Meagher county line. The mean number of rainbow trout and brown trout were 268 and 354, respectively.

The fisheries resource is classified as high value by FWP for the floating section between Camp Baker and the mouth of Hound Creek, where most fishing pressure occurs. An average of 14,129 angler days was expended from the top of the float section to the mouth from 1982 through 2009. In 2015, the average annual revenue generated by this reach of river was estimated at over $5.8 million.

Although fish populations appear to be regulated by environmental factors such as winter habitat and low summer streamflows, special regulations were implemented in the float

section from Rock Creek to Eden Bridge in 1986. In 2004, the special regulations were extended upstream to include the entire float reach. Water-temperature-induced fishing restrictions/closures are a recurring management strategy in drought years. High water temperatures in 2006, 2007, 2012, 2014, 2016, and 2017 caused FWP to implement mandatory time-of-day angling restrictions in mid to late summer and a complete 24 hour per day closure occurred in 2000. The Smith River is also one of 10 streams in Montana where FWP holds a "Murphy" Water Right implemented by the Montana Legislature and periodically calls on this priority water right to maintain instream flows and the aquatic community.

HABITAT

Habitat conditions are variable between the different sections. Stream and riparian habitat have great potential in the upper reaches from the headwaters of the mainstem to the upper end of the canyon (Spring Creek area) where the river meanders mostly through a broad, wide valley in a sinuous pattern. This section of stream almost resembles a large spring creek as it meanders through sedge and hay meadows. Its riparian zone would be dominated by willows and shrubs in a climax condition, and in reaches it contains good instream cover consisting of rooted aquatic vegetation and undercut banks. Other reaches are over-widened with little bank cover, which contributes to algal blooms and high water temperatures. Substrate in this section is primarily silt and gravel. FWP desires to work with willing landowners to improve riparian areas while maintaining existing land uses.

In the canyon section just downstream of Spring Creek to Rattlesnake Boat Camp, the river is incised, and the riparian zone becomes confined between steep limestone walls with limited floodplain development. Riparian vegetation consists primarily of grasses, pine and fir trees, and substrate is gravel and cobble. In some areas, the shrub component has been slowly increasing in recent years.

In the grassland reach below the canyon, the river enters a broad valley of glacial silt, and trout habitat is relatively poor. Much of this section is heavily grazed, and riparian vegetation is limited. Instream habitat is poor due to annual dewatering. Downstream from Eden Bridge, a number of steep erosive banks occur along the stream. Substrate ranges from gravel in the upper end to sand and silt in the lower end, where the gradient decreases and the stream characteristics become more warm water in nature.

The mean discharge at the USGS gage near Fort Logan (river mile 83.7) was 144 cfs for the 22-year period of record (1977-2016). The mean annual discharge of the Smith River for a 21-year period (1997-2017) that encompass a substantial period of drought at the USGS gage below Eagle Creek (River Mile 79.3) was 232 cfs and ranged from 109 to 523 cfs. Peak flows ranged from 472 cfs in 2001 to 4,030 cfs in 2011. The mean discharge of the Smith River for a 24-year period (1952-2016) at the USGS gage near Eden (river mile 27) was 341 cfs and ranged from 107 to 716 cfs. Peak flows, based on 33 years of data for the Eden gage from 1951 through 2017, varied from 719 cfs in 1961 to 12,300 cfs in 1953.

Waters in the Smith River drainage have been appropriated for irrigation, livestock and domestic uses. As in other areas of the state, appropriations are often several times the amount of water actually present. The dewatering and warm irrigation return flows affect the trout fishery of the Smith River. Temperatures above 70° F, which are considered undesirable

for trout growth and survival, occur in the river in mid-summer; water temperatures as high as 83°F have been recorded. The low water levels and elevated water temperatures are probably the greatest factor limiting present game fish populations. Enhancing in-stream flows is the key to benefitting the aquatic resources in the Smith River basin. At least two fish kills involving trout and mountain whitefish have been documented in the South Fork Smith and the mainstem near Eden Bridge; both occurred during periods of elevated water temperatures combined with dewatering of the river. Recurring fish kills involving stonecat have been reported in isolated lower sections of the floating reach over the past decade, generally occurring in late July. Investigations have not determined the cause, but disease or parasites and combined with stress are thought to be likely factors.

Fishing Access

Land ownership in the drainage is about 70% private and 30% public (USFS and State). Public access to the river is restricted throughout the drainage on larger streams and rivers. Access across private land is often difficult to obtain, especially in the canyon section. FWP manages four FASs in the in the drainage, including a leased site at Newlan Creek Reservoir, the Fort Logan (aka Smith River) FAS, approximately 19 miles northwest of White Sulphur Springs on the upper river, and Truly Bridge and Lower Smith River on the lower river, 8 and 3 miles south of Ulm. FWP's Parks Division manages two additional fishing access sites as part of the Smith River State Park at Camp Baker (put-in) and Eden Bridge (take-out) to accommodate floaters. As a result of the limited access, a large part of the recreational use of the river involves float fishing and boating on the 61-mile-long section of river from Camp Baker to Eden Bridge. FWP and the USFS maintain numerous boat camps along the floating stretch. The floating season usually begins about mid-May and continues until sometime in July in most years when water levels become too low for floating. FWP manages this popular section of river through a lottery-issued permit system.

Special Management Issues

The Smith River Management Act, passed by the Legislature in 1989, delegates to FWP the primary recreational management responsibility for the Smith River waterway between Camp Baker Fishing Access Site and the mouth of the Smith River at the Missouri River. The Fish and Wildlife Commission has rulemaking authority to regulate recreational and commercial floating and camping use on the Smith River waterway. The Act included a section that provided for part of registration fees to be deposited into the Smith River Corridor Enhancement Account to lease or acquire property in the corridor; develop projects that protect enhance and restore fisheries habitat, streambank stabilization, erosion control, and recreational values; and to maintain and enhance instream flows for recreational and aquatic values in the corridor. The FWP Parks Division administers both the recreation program and the Corridor Enhancement Account.

The Smith River Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Smith River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

FISHERIES MANAGEMENT DIRECTION FOR SMITH RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Smith River	42.7 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Improve instream flows and irrigation water conveyance management. Maintain habitat and instream flows of 9 cfs					
Smith River (Sutherlin) Reservoir	377 acres	Rainbow Trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Brook Trout	Hatchery	General	Maintain populations and recreational fishery for consumptive harvest by continued stocking if plants exhibit good growth and survival.
		Mountain Whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations and recreational fishery for consumptive harvest.
		Kokanee Salmon	Hatchery	Put, Grow, and Take	Establish population and recreational fishery for consumptive harvest.
Habitat needs and activities: Work to maintain water levels in reservoir with water users.					
South Fork Smith River	42 miles	Brown trout, Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 7 cfs					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Smith River (Confluence of the North & South forks to the Confluence of Sheep Creek)	41 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flow reservation of 78.5 cfs. Protect Murphy Rights, which are 150 cfs from 5/1-6/30 and 90 cfs from 7/1-4/30. Improve habitat and flow conditions as opportunities allow.					
Newlan Creek	21.7 miles	Brook Trout, Rainbow Trout	Wild	General	Maintain a recreational fishery with harvest within historic levels. Evaluate importance of reach below Reservoir to Smith River fish populations.
Habitat needs and activities: Maintain habitat and instream flows of 3.8 cfs. Consider potential for conveyance of stored water to enhance instream flows in the Smith River. Evaluate potential solutions to reduce impacts from sediment transport from trans-basin diversion ditch.					
Newlan Creek Reservoir	265 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking. Work to prevent stunting.
		Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking.
		Brown trout, Brook trout	Hatchery	Put, Grow and Take	Maintain populations and recreational fishery for consumptive harvest by continued stocking if effective.
		Kokanee Salmon	Hatchery	Put, Grow, and Take	Establish population and recreational fishery for consumptive harvest.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Burbot (N)	Wild	General	Maintain populations and recreational fishery for consumptive harvest.
Habitat needs and activities: Work to maintain water levels in reservoir with water district.					
Big Birch Creek	14.4 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Maintain populations within historic levels in all reaches which have limited public access potential. Evaluate importance of stream to Smith River fish.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs.					
Sheep Creek	36.6 miles	Rainbow trout	Wild	General	Maintain populations within historic levels providing for recreational use. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Evaluate importance of stream to Smith and Missouri River fish.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs. Maintain water quality and habitat if mining development proceeds in drainage on private land.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Smith River (confluence of Sheep Creek to the Confluence of Hound Creek)	73.6 miles	Rainbow trout, Brown trout	Wild	Restrictive Regulations	Maintain a recreational fishery within historic population levels.
		Mountain whitefish (N), Burbot (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flow reservation of 150 cfs. Protect Murphy Rights, which vary from 125-400 cfs depending on location and time of year.					
Rock Creek	22.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels providing for recreational use. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 11 cfs.					
Tenderfoot Creek	25.9 miles	Rainbow trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery. Evaluate importance of stream to Smith and Missouri River fish.
		Westslope cutthroat x Rainbow trout hybrids	Wild	General	Maintain populations providing for a recreational fishery. Evaluate the potential to provide harvest of hybrids above and below falls.
		Brown trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery. Evaluate importance of stream to Smith River fish.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Determine origin of fish accessing lower reaches of the stream. Identify potential importance of lower reach to Smith and Missouri River populations.
Habitat needs and activities: Maintain habitat and instream flows of 15 cfs. Support efforts for USFS to purchase Bair Ranch Foundation properties in the drainage.					
Hound Creek	25.2 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with harvest within historic levels. Evaluate importance of stream to Smith and Missouri River fish.
		Brook trout	Wild	General	Maintain a recreational fishery with harvest within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels. Evaluate importance of stream to Missouri River fish.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs.					
Smith River (Confluence of Hound Creek to the Mouth)	24 miles	Rainbow trout, Brown trout, Mountain whitefish (N), Burbot (N), Walleye	Wild	General	Maintain a recreational fishery with harvest within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 80 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations)	18.4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain and protect populations to reduce extinction risk. When biologically feasible provide for limited consumptive use.
Habitat needs and activities: Seek opportunities to survey for the presence of WCT and possible restoration projects on private land. Evaluate project(s) to restore WCT populations to Camas Lake and Big Camas Creek.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams (Mixed Populations)	28 miles	Westslope cutthroat trout & hybrids	Wild	Conservation	Maintain and protect populations. Allow harvest in robust populations.
High Mountain Lakes in Big Belt Mtns	59 acres (6 lakes)	Westslope cutthroat trout, Rainbow trout	Hatchery/ Wild	Put, Grow and Take/ Quality/ Conservation	Maintain populations for recreational fishery where natural reproduction is limited. Explore opportunities to convert naturally reproducing populations to westslope cutthroat trout or Arctic grayling populations.
Habitat needs and activities: Explore opportunities to improve spawning potential in some lakes.					